4. Igor

Program Name: Igor.java Input File: igor.dat

It's a long, hard day at the palindrome recycling factory. Workers take old unwanted strings, and recycle them into new palindromes! A palindrome is a string that reads the same forwards and backwards. For example, "racecar" and "noon" are palindromes, while "bus" and "midnight" are not.

To recycle a string S, first rearrange the letters of the string arbitrarily, then cut the string into pieces such that each piece is a palindrome. For example, given the string "atlanta", one possible way is to rearrange the letters into "lanatat" and then break them up to form the palindromes "l", "ana", and "tat". Note that these palindromes do not have to be valid English words.

The laziest solution to this is to break a string into individual characters, but the masses pay a premium for longer palindromes. The value of a palindrome P is equal to the square of its length. That is, "racecar" has a value of 49, and "noon" has an example score of 16.

Igor has been given a string S to recycle. What is the maximum value he can get from its parts?

Input:
Input starts with a line containing an integer T (1 <= T <= 20), the number of test cases. Following this are T lines, each with a single string S. The length of S is at least 1 and at most 2,000. Every character in S is a lowercase letter a-z.

Output: For each test case, output the case number and the maximum amount you can recycle this string for, formatted as in the samples.

Sample input:
```
4
atlanta
abcd
abcdefghijklmnopqrstuvwxyz
fwgqtsiczjnbavkmrpeyluhxdo
```

Sample output:
```
27
4
26
26
```